Editor's Chat

COOPERATIVE BUYING

Years ago in my county agent days I helped groups of farmers to organize for the cooperative shipping of livestock and purchasing of seeds, feed and pest poisons. In recent years, because of requests from farm leaders, I have made some investigations and given serious thought to similar cooperative purchases of electrical supplies and equipment.

Under certain conditions, large cooperative buying associations have been successful in saving money for farmer members on some items of electrical equipment. In other cases patronage dividends, representing savings, have been nil or nearly so.

If everyone was willing to walk into the co-op warehouse with his cash for pump or range, take it home, install it himself and keep it in repair, there would be no question about a saving. But as soon as we demand freedom of choice with the opportunity of seeing different makes or models and learning of their relative merits, the co-op must add sufficient to the price to provide display models, display space and a salesman. Likewise the price must go up when experienced engineers or mechanics are needed for designing or planning the pump, grinder or range installation. The service problem offers few obstacles while the equipment is new, but sooner or later equipment will need attention or repairs and may become a worry or total loss if service or parts are not available. Some co-ops which have been quite successful in handling such simple products as feed, seeds, fertilizers and gasoline have found it difficult to accomplish real savings on electrical equipment.

There is a possible method, however, whereby groups of farmers belonging to the local community club, FFA adult study group, Grange or Farm Bureau may bring about savings for themselves without losing the benefits of free choice, technical guidance and competent service. It involves doing some of the things for yourselves that ordinarily cost the dealer money. Suppose two members of the local Grange are thinking of buying milk coolers. The fact might be made known at a Grange meeting with the result that several others may also be interested, at least in getting the facts. Your county agent, teacher of vocational agriculture or representative of the organization from which you buy electricity should be able to furnish you with unbiased information. Study the relative merits of air- and water-cooled compressors, agitated and unagitated water, different kinds of insulating materials, availability of service, relative costs of ice and electricity for cooling, and the possible premium obtainable for thoroughly cooled milk or cream. When the interested members have decided on the size and type of coolers needed—some other local might join with you—, present your requirements to reliable local dealers for a price on the entire lot.

No dealer is required to give you a special price because I suggest it. He's human, however, and if you save him sales expense and increase his volume of business, the chances are that he will meet you half way. You are not obligated to buy cooperatively with your neighbors because you have studied equipment with them; but the study of the ranges, pumps, refrigerators, brooders, grinders, washing machines or other equipment, may save you from making a bad investment in equipment not adapted to your needs or more costly than necessary for the purpose.

This is no Bonanza scheme. There are no membership fees, no warehouses, no paid personnel. The simplicity of it is its virtue. It might fit your community.

Before going too far toward a co-operative purchase it would be well to inquire whether such purchase of the particular commodities desired would be contrary to the Robinson-Patman Act or any State fair trade acts.

BROODERS

Roy E. Jones, a poultryman with an excellent reputation in the Eastern states, presents a strong case for electric brooding in this issue. He gives both the good and the bad points of electric brooding impartially. Weighing both sides in the light of practical experience, Mr. Jones speaks highly of electricity for producing good chicks. Whether fan-type, radiant heated or convection heated brooders are best is still a moot question. Each type has its advocates and each type is doing a good job for the poultrymen who like them best.

George Kable

February, 1940 **ELECTRICITY ON THE FARM** **Vol. 13, No. 2**

The National Magazine of Rural Electrification

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GEORGE W. KABLE, *Editor*; KARL M. MANN, *President*; FRED SHEPPERD, *Editorial Director*; I. H. CASE, *Vice-Pres. and Gen'l Mgr.*; K. H. GORHAM, *Advertising Manager*; H. S. ESSEX, *Production Manager*. CHICAGO: 6 No. Michigan Ave.—W. S. CLEVENGER, *Western Manager*; L. M. ROCHE, *Western Representative*. SAN FRANCISCO: 444 Market St., Room 305—C. H. WOOLLEY. Subscription price: 75 cents per year; single copies, 10 cents. Special bulk rates on application. *Contents Copyrighted* 1940 *by Case-Shepperd-Mann Pub. Corp.*

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'It's made by Singer'

you know it's the best you can buy!"

John thinks I ought to get a Singer . . . but I don't know whether we can afford it.
My dear, take my advice! The extra money you put in a Singer you get back a thousand times. What Singer makes is made to last!

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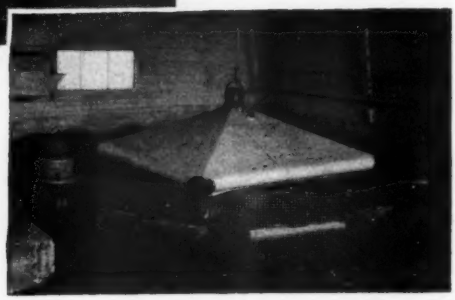
Left: Insulated, slot-ventilated brooder house at Gastler Bros. farm, Durham, Conn. It is used for brooding in the winter and spring, and for housing stock in the summer and fall.

Below: Two electric brooders are used in each 24 x 24 ft. pen in Gastler Bros. insulated house. Power consumption is low.



ELECTRIC BROODING IS HERE TO STAY

By ROY E. JONES

Mr. Jones is Extension Poultryman with Connecticut State College and a well known writer on poultry subjects in the New England States.

EVERY poultryman who recognizes the tremendous service that electric power has rendered to the poultry industry in electric incubation, house lighting, pumping water, egg cooling, candling, etc. is interested in electric brooding. Poultrymen who are keeping abreast of the times are asking two questions: "Can I brood better chickens with electric brooders?" and "What will it cost?" The generally accepted opinion seems to be that electric brooders do brood better chickens but perhaps it would be best to weigh the advantages and disadvantages and try to determine why electrically brooded chickens should be better.

Advantages of Electric Brooding

Better Feathering.—Chicks under electric brooders have to feather fast. It is warm under the hover but the room is cold. It is Nature's way, and Nature seems to step up feather growth to supply the need. Furthermore, there is little or no tendency toward feather picking, perhaps because feather growth is fast and the pinfeathers are covered in before the chicks arrive at the age when cannibalism is usually troublesome.

Rapid Growth.—Rapid, even growth is a characteristic of electrically brooded chickens. This may be due to small units, no crowding and no overheating or chilling.

High Humidity.—High humidity is an important requirement and one easily maintained in electric brooding. This applies particularly to the first week or ten days. After that time chicks consume enough water and give off enough moisture to create an excess rather than a lack of humidity.

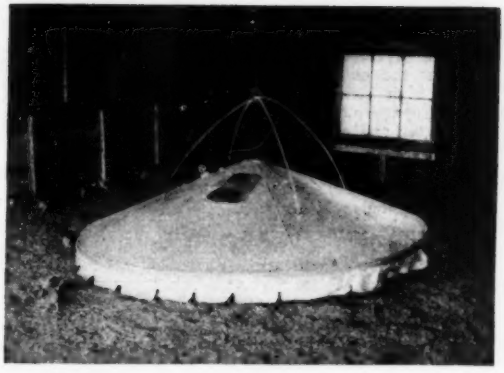
Never Overheated.—The automatic control of the electric hover shuts off the current when the required temperature is reached, thus avoiding the possibility of overheating and baking.

Ideal for Hot-Weather Brooding.—The electric brooder is ideal in hot weather because it operates only when needed, effecting economy and providing protection against sudden changes.

Reduces Labor.—Electric brooding well done does not reduce labor during the first few days as chicks must be hover-broken, they must be taught to eat and they must be encouraged to run in and out. After the first few days there is a very definite saving in labor because heat is automatically taken care of.

Disadvantages of Electric Brooding

Power Failure.—One disadvantage of electric brooding is the possible interruption of power. The distance from the power station or high tension line and the adequacy of local service crews are factors that have a bearing on the seriousness of this disadvantage. The interruption disadvantage varies greatly in different communities but has decreased as rural service has become better established. Most power companies consider incubator and brooder operators preferred customers and have linemen available for twenty-four-hour service.



A corner in the Brooder house at Mt. Fair Farm, Watertown, Conn. Brooders are suspended by ropes and counter-weighted for ease in handling.

Excessive Moisture.—Excessive moisture in the litter beneath the hover and particularly around the outer edge of the hover when brooding under cold-weather conditions is sometimes a serious problem. Improved types of brooders and forced circulation with a fan, reversing the movement of air in the brooder, has done much to correct this condition.

Insufficient Heat.—Low room temperature under average electric brooding conditions is an advantage but this may be carried to an extreme. Electric brooding enthusiasts state that supplementary heat is never necessary. I have seen good chicks brooded where the temperature occasionally went as low as zero inside of the house within two feet of the hover, but such conditions are not favorable for the chickens or for the operator. Limited supplementary heat is desirable under extreme conditions when house construction and insulation are not adequate.

Choosing an Electric Brooder

Unfortunately, electric brooders like most other types of equipment are built on price as well as on performance. A good electric brooder must have a powerful and efficient heating element with a sensitive thermostat and accurate temperature control. A good electric brooder must be well insulated as economical operation in cold weather without complete insulation is impossible. Forced air circulation helps to eliminate the danger of excessive moisture beneath the hover and around the outer edge of the hover.

An electric brooder must be easy to clean, easy to handle and durable, giving a long life of efficient service.

Electric Brooder Operation

The operation of an electric brooder in warm weather is relatively simple. It makes little difference whether the brooder house is large or small, insulated or uninsulated; but modern poultry keeping demands *early* brooding. In fact many poultrymen are practicing year-round brooding. A discussion with Clifford Peck of Mount Fair Farm, Watertown, Connecticut, brought out some interesting observations that should be of value to every operator. Mount Fair Farm is operated in an exposed position where high wind and low temperature are the rule rather than the exception. Electric brooding with various types of brooders has been practiced over a period of years. At the present time brooding is practiced in their long barracks house or laying house which has 20′ x 30′ pens. The house is insulated but it has the disadvantage of being set up on posts with a board floor. Mr. Peck states, "I use three electric brooders in each 20′ x 30′ pen and one oil-burning stove equipped with a fan for air circulation. This maintains satisfactory room temperature under my extreme conditions. I use a deep litter from the very beginning as it is necessary for floor insulation. I spend considerable time with my chicks the first few days, lifting the hovers several times a day to make sure that all of the chicks get out, get something to eat and drink and get back again even though I provide feed and water under the hovers at the beginning. As the chicks grow older and require less heat I follow a practice that may be a surprise to some but to me it seems sound, common sense. I do not change the hover temperature regulation to economize on power but rather operate with the same regulation until the chicks are large enough to have the current turned off.

"I raise the hover slightly at night and lower the hover during the day which, I believe, is contrary to general practice. My reason for doing this is because all of the chickens are under the hover at night, they create a lot of heat and as they grow older they need to have the hover lifted to provide better air circulation. During

Long line of electric brooders on Creighton Bros. farm, Warsaw, Indiana.

the day there are very few chicks under the hover but the chicks running around a cold pen need a high temperature hover where they can run in, warm up quickly and run out again for feed, water and exercise."

If we judge the soundness of Mr. Peck's recommendation by the results obtained, one visit at Mt. Fair Farm at this time of year would convince the most skeptical. The chickens grow extremely fast, they are very uniform in size and feathering and last year 2,400 chickens were brooded up to the time they went on range with a fraction of one percent mortality.

Building for Electric Brooding

When Gastler Brothers of Durham, Connecticut, decided to adopt electric brooding it meant more than simply throwing out coal stove brooders and putting in electric brooders. For them it meant building a house suitable for the large-scale electric brooding necessary to fit into their farm operation.

The house built was a Connecticut 24-foot house with complete insulation, sliding glass windows, slot ventilation and containing eighteen 24' x 24' pens. This house is used as a barracks house during the summer and fall but as a brooder house from January 1 on. Equipped with electric brooders throughout, it is a joy to see and to operate.

In a house of this type several stories high and thoroughly insulated, the temperature rarely goes below freezing when the electric brooders are in operation even though they give off practically no heat. Supplementary heat is not necessary and the current consumption is low.

From the standpoint of efficient management, this house with electric brooders and a feed room on each floor would be hard to beat.

After several years of operation, Gastler Brothers are very enthusiastic about their equipment and would build the same if they were to build again.

Electric brooding has a very definite place in poultry management. It is convenient, easily controlled and safe from fire hazard. It is practical at any time of year and can be operated under cold-weather conditions without supplementary heat, but those who build insulated houses for electric brooding will find it most satisfactory.

New Turkey Experiment Station with Electrical Equipment

DR. WILLARD C. THOMPSON (left), head of the poultry department of the New Jersey Agricultural Experiment Station, and Dr. William H. Martin, director of the institution and dean of the State College of Agriculture, examine a Monmouth Bronze turkey on the farm of Samuel Lippincott, Marlton, in view of planning a research program for the Experiment Station's new turkey farm in Millville. The breeding of a smaller turkey, but one as fully developed as the bird in the picture above, is one of the purposes of the new research farm.

HOW can electricity help further to reduce costs on turkey farms? What are the effects of night lights on turkeys? If the war in Europe should curtail America's supply of cod liver oil from the Norwegian countries, would a sunlamp provide the needed vitamin D for growing poults?

Such are the questions Garden State turkey growers are looking for their State Agricultural Experiment Station at Rutgers University to answer as the result of work at its new turkey research farm in Millville, New Jersey. The farm, which began operation December 1, is the first of its kind in the country to be devoted entirely to turkey research.

In the interests of growers and consumers, the research farm will be devoted to solving problems of feeding and management and to finding new turkey products for eastern producers to offer the market, including a "streamlined" breed of turkey more suited to small family dinners. The value of putting breeders under lights to stimulate egg production and the effect of lighting on the food consumption of young poults will also be tested.

Electricity is already playing an important part in the farm's operation, according to Dr. W. C. Thompson, head of the Rutgers' poultry department. The laboratory is equipped with electrically operated brooders, incubator and waxing machine to cut operating costs and an electric killing device will be added in the future.

DOROTHY V. SMITH,
New Jersey Extension Service.

WOMEN ON THE AIR

MARY MARGARET LYNCH
Broadacres Farm, Cochranville, Pa.

OUR neighbor Mrs. Smith and her mother, Mrs. Jeffries, were visiting us last evening. As we drank the grape juice and Jack finished the last piece of Anne's chocolate fudge cake; after we had exchanged our newest recipes and discussed the cost of getting a good stand of alfalfa, the talk turned to radio.

"Well," said Mrs. Smith, "Even Sam likes to hear her and I tell you, when Sam Smith listens to a woman talking over the radio, she has to be pretty good!" Then she said, "You know, we didn't hear her the other day and I just felt I missed something. The way she tells about places she goes and people she meets, you feel you were right there with her. You can learn a lot by listening to Martha Deane."

Do you know Martha Deane? The chances are that you do, for she is counted a good friend by thousands of women. She is an important person and a very busy one, but you can come to know her, too. All you have to do is to turn on your radio. She'll come right into your living room or kitchen and the two of you can spend a half-hour or so together every day while she talks about the new hats she saw on Fifth Avenue, or the fun of her first airplane trip to Florida to see her mother, or the new recipe for chicken some radio friend from California sent to her. Martha Deane doesn't mind if your electric iron makes quick work of the week's laundry while she talks, but it's just as well you do have that thermostatic heat control, for you might become so interested in Martha Deane that you'd forget to watch the iron!

After you hear Martha Deane, you always want to add your bit to the one-sided conversation. Her other listeners feel the same way and many of them do answer back—by mail. Sometimes, when they go to New York, they really meet her and are her guests in the studio at a broadcast.

She Makes and Breaks the News

Dorothy Thompson, columnist, author, reporter, homemaker, former foreign correspondent, has an unusual nose for news. She once traveled half-way across Europe in evening clothes because she was given a rush assignment to cover a young revolution.

But 'Martha Deane' is not her own name. She is really Mary Margaret McBride and it may partly be the Irish enthusiasm back of her name which makes her the personage she is. Martha Deane is heard over the Mutual network and as Miss McBride was once a newspaper woman she still writes feature stories for magazines. Interesting ones, too. She is a gay, cheerful person, not old in years, and very young in spirit.

When I was in Pittsburgh attending the national Home Economics meeting and on duty at the information desk, two high school girls came over and asked:

"Will you tell us where we can see the Miss Ruth van Deman who talks on the Farm and Home Hour?"

The girls had no trouble in finding Miss van Deman, for she was in charge of the exhibit of the Bureau of Home Economics of the U. S. Department of Agriculture and busy as she could be, showing visitors the beautiful scrapbook of photographs made of the activities of the Bureau. When I was up there, almost everyone who spoke to her told her how much they enjoyed the daily Farm and Home Hour broadcasts. When you listen to the Farm and Home Hour on Thursdays, you will know that Miss van Deman has both a fine sense of humor and a great deal of commonsense. She also has a pleasant speaking voice and she is as pleasing to see as she is to hear. She has sparkling eyes and the dark auburn hair which makes you think that there should be a "Mc" in her name, too!

She Has Two Names

Mary Margaret McBride is heard as Martha Deane over the Mutual System every afternoon from Monday until Friday.

Many other Farm and Home Hour 'stars' attended the convention. Have you heard of Miss Ruth O'Brien of the Bureau of Home Economics? She is the woman who speaks so often on Consumer Education,

Farm Hour Dramatists

Judith Lowry and Harvey Hays, center, play leading roles of Bess and Ranger Jim in Uncle Sam's Forest Rangers, the popular dramatic sketch heard each Friday as part of the National Farm and Home Hour. They are conferring here with Lloyd "Bucky" Harris, member of the production staff.

telling us how to get our money's worth in the things we buy. Miss O'Brien is a Home Economist but she is a lawyer, as well. She has gone into court to prove certain manufacturers or stores were not using truth in advertising or in selling their products—and she wins her cases! Her latest venture is to direct the measuring of thousands of women, all over the country; in an attempt to help clothing manufacturers determine what size the "average-size" American woman actually is!

A Farm Family Program

The Farm and Home Hour, as a program planned for the entire farm family, is not limited to speakers from the Bureau of Home Economics or other branches of the Department of Agriculture. Some of the most interesting speakers on the Hour are those who never faced a microphone before. They are people just like us, who are usually on the receiving end of a program but because they have done some one thing especially well, they have been asked to tell about it. It may be a girl from Iowa, whose canning championship has won for her a free college education, or it may be the prize-winning group in a dramatic contest sponsored by a State Grange. It may be as it actually was one day last summer, a moving story of faith and courage very simply told by a farmer and his wife, who with the help of their family and county agents, made a pleasant home and a good living from what had been an abandoned farm. Hearing people like those gives us ideas and the inspiration to carry them out.

Another government-sponsored radio program of interest to farm women has Miss Katherine Lenroot, head of the Children's Bureau of the U. S. Department of Labor, as its chief speaker. It is the Children's Bureau, you know, which issues that complete booklet called "Infant Care", which has become the standby of mothers and is used as a text-book in so many high school classes in Home Economics. There are two kinds of women—women who report the news, and women who make it. It is hard to place Miss Lenroot in either group. She works quietly and steadily, without personal publicity, yet she broadcasts and makes speeches to arouse public interest in her work.

One of the best-known of the women who report news is that newspaper columnist, magazine writer and radio political commentator, Dorothy Thompson. The daughter of a minister, she combines wide interests with great ability, for she is a mother and homemaker as well as a writer and radio personality. Dorothy Thompson is a woman who reports the news but she has also been one of the women who make it. The first time, she was asked to leave a certain European nation because she openly criticized the policies of its dictator. Another time Dorothy Thompson made news was the day she ceased legally to be Miss Thompson and became the wife of the great American novelist, Sinclair Lewis.

Another woman who reported news and did it so well that she became news, was Mrs. Wilson, selected as last year's outstanding country woman newspaper reporter. Mrs. Wilson was given a trip from her Western home to New York, was the guest of a newspaper association convention and was interviewed over a nation-wide radio hook-up. When the interviewer asked her what she planned to do with her prize money, Mrs. Wilson replied.

"Well, one of the first things I'm going to do is to buy a new radio!" She's just like the rest of us. She wants to hear the women on the air.

Motor Driven Feed Choppers

Grain feed choppers so frequently used on poultry farms throughout New Jersey can readily be converted to motor drive. Hand operated equipment is readily powered with a quarter or third horsepower motor. Suggested treatment is V-grooving of the cast fly wheel to receive a standard V belt, and mounting the motor on a board platform which in turn is hinged or pinned to the cutter frame so that the weight of the motor determines the belt tension. Pinning the motor facilitates ready removal for attachment to other small motor operated equipment, such as the seed cleaner, corn sheller and grindstone. Motor operation has the advantages of uniform speed, the elimination generally of one man's time, and a decided saving in work cost. Anyone doing work which a motor can do has a wage equivalent of about two cents an hour.—*W. C. Krueger, N. J. Extension Service.*

Thrombin, a gray-white powder made from blood and beef lung, has been found by doctors of the University of Iowa to stop profuse bleeding in a few seconds by forming a quick blood clot.

ELECTRIC MOTORS

Article No. 3—Types of Motors (Continued)

By H. P. RICHTER

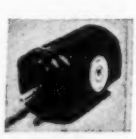
Repulsion-Induction Motors—This motor also operates only on single-phase alternating current. Usually it is so designed that it will operate on either 115 or 230 volts, by interchanging four wires which come out of the motor. It has a very large starting ability and should be used for the heavier jobs; it will "break loose" almost any kind of hard-starting machine. The starting current is the lowest of all the single-phase types of motors.

Three-Phase Motors—These motors, as the name implies, operate only on three-phase alternating current. Although in general there is very little difference between the various types, always specify the purpose for which the motor you propose to buy is to be used. Three-phase motors in sizes ½ hp and larger, cost less than any other type, so by all means use them if you have 3-phase current available. *Do not assume that because you have 3 wires serving your premises, that you have 3-phase current; more likely you have 3-wire 115-230 volt single-phase current. If in doubt, see your power company.*

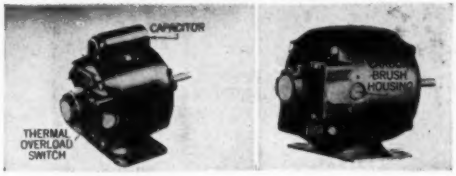
Direct Current Motors—Direct current is found in the downtown sections of some large cities like Chicago and New York, and in some small towns. All 32 volt farm plants are direct current as are some of the 110 volt farm plants.

Motors for direct current are of one type only and have no special name or type. They are suitable for any general purpose work. The speed is usually around 1800 but the speed varies considerably more than in alternating current motors, and varies considerably with the voltage. Idling it may be as high as 2400 rpm unlike the alternating current type which never exceeds 1800 rpm for common types.

Universal Motors—This type of motor operates on either direct current or single phase alternating current of 60 or any other cycles. However, the speed cannot be kept at a predetermined figure but varies over an extremely wide range. Idling, such a motor may run as fast as 15,000 rpm; while under a heavy load the same motor may slow down to 500 rpm. This of course makes the motor totally unsuitable for general purpose work. It is used only when built into a piece of machinery where the load is constant and definitely predetermined. For example, you will find this motor on your vacuum cleaner, your sewing machine, on some types of fans, on electric drills, etc.

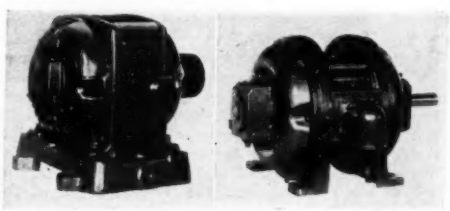


Universal motor for use on either alternating or direct current. Sizes up to 1/3 hp.



Left: A ¼ hp **Capacitor** motor with a built-in thermal overload switch. Capacitor motors are built in ⅛ to 10 hp sizes. Some Capacitor units are square instead of round like this one, and some are built into the base or the motor itself so they are not seen. Remove the capacitor and this illustration will be a typical **Split-Phase** ⅛ hp motor. Split-Phase motors are made in sizes from 1/20 to 1/3 hp.

Righ: A ⅛ hp **Direct Current** motor with thermal overload protection. D.C. motors are made in sizes from 1/20 to 200 hp.



Left: 1 hp **Repulsion-Induction** motor for use on single phase 115 or 230 volt lines. They are made in sizes from ½ to 10 hp and are the type motors generally used on farms where the size is 1 hp or more.

Right: Typical 3 hp three-phase **Squirrel-Cage Induction** motor. Smaller per hp than other types, but only usable where three-phase current is available. Made in sizes from ⅛ to 200 hp.

Reversing Direction of Rotation—Repulsion-Induction motors can be reversed only by shifting the position of the brushes. Other Types of motors can be reversed by interchanging two wires which come from the inside of the motor. If the motor must be frequently reversed, a special switch for the purpose can be installed in a convenient location.

Problems With Large Motors—Often a farmer feels the need for a motor of 10 hp or larger. Upon looking into the subject, he learns that single-phase motors are made no larger than 10 hp, are quite expensive in the 7½ and 10 hp size, and also discovers that the transformer serving his premises is too small to operate a motor larger than 3 hp or 5 hp. The power company probably objects to putting in a larger transformer because that would be

(*More on page* 25)

ULTRA-VIOLET LAMPS PLEASE FIRST OHIO USER

Above: The S-4 lamps are placed directly over the feed hoppers in the Casler poultry plant. The 100-watt lamps give enough visible light so the hens can see to eat while being irradiated. The parabolic aluminum reflectors push the ultra-violet down on the hens. The cylindrical housings above the reflectors contain the transformers necessary for the operation of the lamps. **Left:** Mr. Casler, right, and Joe Ditchman, of the General Electric Co., lamp laboratories, left, discussing results in front of one of the Casler two-story hen houses.

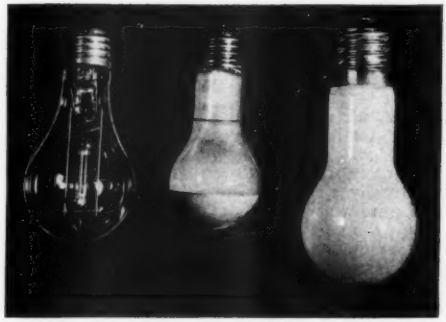
FOUR years ago when the new 100 watt S-4 ultra-violet producing lamp was still a nameless infant in the lamp family, it was tried out experimentally on the poultry farm of A. F. Casler, R. D. No. 1, Willoughby, Ohio. Not only was the new lamp tested for what it would do, but it was compared in a practical way with its older brothers, the S-1, S-2 and CX lamps. The result of the test has been the continued use of the S-4 lamp to the exclusion of the others.

In giving the reasons for his selection, Mr. Casler had these brief but pertinent comments to make about the various lamps. The CX lamp did not produce enough ultra violet to interest him. The S-1 lamp—a 400 watt unit—produced plenty of ultra violet, enough to give the hens a sunburn when used 18 inches above the feed hoppers, and gave very satisfactory results on the hens. The S-4 lamp, however, produces just as much ultra violet, costs less to install and uses only one-fourth as much electricity. And that is why he is using it.

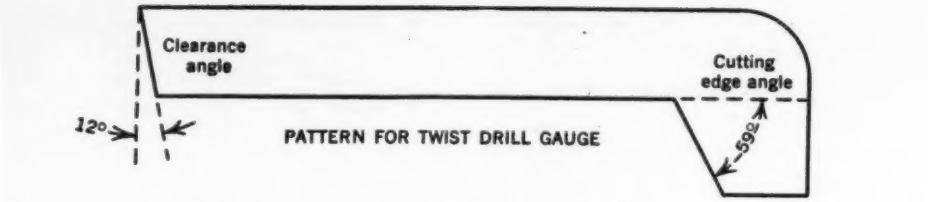
Mr. Casler is not the kind of poultryman who gets wildly enthusiastic about something new. He did have this to say, however, about his use of ultra-violet. Any chicks with a tendency toward rickets were brought out of it in the early stages by irradiation. He does not recommend it as a cure-all for disease, but as a safeguard against it. Pullets and hens which were lighted with *any type* of ultra-violet lamps or Mazda lamps all seemed to lay about equally well (exact comparisons were not made) but the birds under S-4 and S-1 lamps were healthier and more vigorous, with combs that turned red as soon as they were irradiated. Hens kept under the lamps all winter for egg production were used as breeders and produced eggs of high hatchability resulting in vigorous chicks. Some of the irradiated hens were good producers well into their fifth year. They were the strongest birds Mr. Casler has ever had. Egg shells from irradiated hens were strong and of uniform texture and the egg whites were thicker and stood up better.

Mr. Casler has been making money on his hens. He paid his hired man a substantial bonus at the end of the hen year. He did not make money just because he used ultra-violet, but because he bred well from the country's best stock, fed a good uniform balanced ration, cared well for his stock, purchased carefully and marketed to appreciative buyers who came to his door for the eggs because "they taste better". Customers come for 15 miles to buy eggs. He needs no cooler, for the eggs are not on hand long enough to need cooling. Housewives who have used the eggs

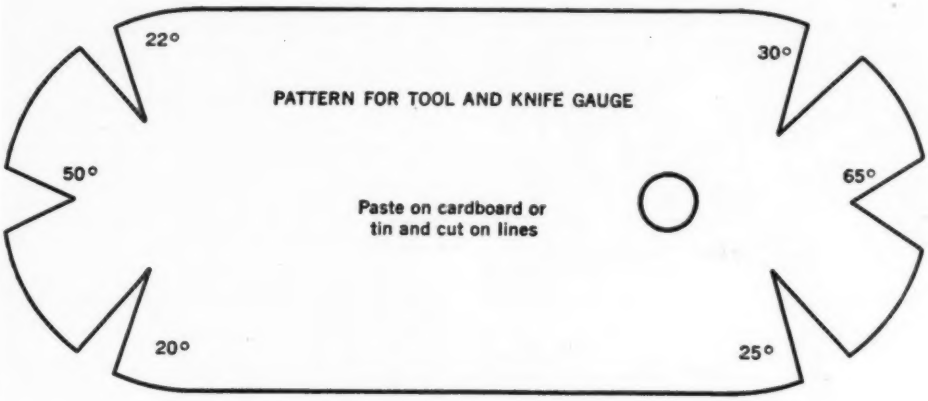
(*More on page* 25)



Left to right: S-4, S-2 and S-1 lamps.



PATTERN FOR TWIST DRILL GAUGE



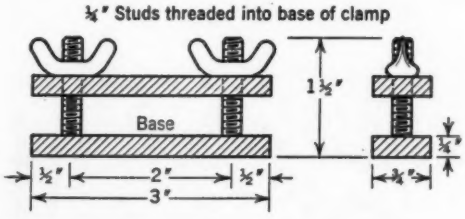
PATTERN FOR TOOL AND KNIFE GAUGE

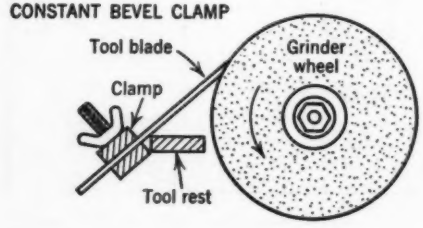
SHARPENING FARM TOOLS

The Agricultural Engineering Department, University of Wisconsin, Provides These Instructions in Outline Form for the Use of Electric Grinders and the Sharpening of the Edge Tools Commonly Used on the Farm

The Grinding Wheel

Type to Use: Emery. Fine wheel No. 70-80 grain; course wheel No. 36 or 46 grain. Or specify a general purpose fine and general purpose coarse wheel, medium hard.





Size: A grinding wheel 6" in diameter and 1¼ or 1½ inches thick is a good general-purpose size. An 8" wheel is better for ensilage cutter knives and heavy grinding.

Speed: High speed is very important in order to do fast work and reduce the danger of burning the piece being ground.

Recommended Speeds

Diameter of Wheel	R.P.M.	Peripheral Velocity Ft. per Minute
5"	3000 to 3800	3920—4915
6"	2500 to 3200	3920—5020
7"	2200 to 2700	4040—4950
8"	1900 to 2400	3970—5020

Direction of Rotation: The wheel should turn toward the work: that is, the front of the wheel, or the edge facing the operator turns downward.

Keep the Wheels Tight: Keep the nuts tight that hold the wheels on the arbor or shaft. These nuts turn off the way the wheel runs. The nut on the right-hand side turns **off** in a counter-clockwise direction, and the one on the left side turns **off** in a clockwise direction.

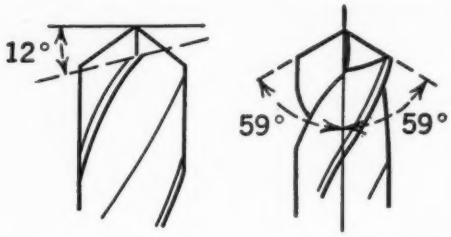
Keep the Working Edge of the Wheel

Flat and Square by using a **grinding wheel dresser,** which can be purchased for about a dollar.

Sharpening Wood-Cutting Tools

Use the fine wheel.

The Bevel: The correct bevel for wood-cutting tools such as plane blades, wood chisels, etc., is 20° for working on soft woods and



30° for working on hard woods, or 25° for general work.

A plan for making a bevel gauge is shown.

How to Maintain a Constant Angle when Grinding: The grinder is equipped with a tool rest. A small clamp, made according to the accompanying sketch, will be found convenient in holding the tool on the rest at the correct angle.

Use the Clamp as Follows: First adjust the tool rest on the grinder, parallel with the face of the wheel, as close to the wheel as possible, so that it will not rub. The tool rest should have a straight edge. Place the clamp square on the tool to be sharpened and grind it lightly. Check the bevel with the gauge and adjust until the correct angle is secured.

Grind Lightly: Bear down on the tool very lightly, so as to avoid burning. Remove it frequently and dip it in water to keep it cool. Do not allow it to get excessively hot, as this will burn the steel and spoil the temper.

Grind the Edge Square: Grind the tool so that the cutting edge is square with the side.

Angles of Bevels

Usual Angles of Bevels for Ordinary Farm Tools

Machine or Tool		Bevel Angle (degrees)
Chisel or plane	—Soft wood	20
	—General purpose	25
	—Hard wood	30
Cold chisels	—Cast steel	65
	—General-purpose work	50
	—Soft iron and soft metals	30
Ensilage cutter knives	—Cylinder type	22
	—Flywheel type	25
Mower sections	—	20

For chisels, the cutting edge should be straight. For plane blades, the edge is usually rounded very slightly near the sides.

Sharpening Twist Drills

Angle of the Cutting Edges: The accompanying diagram shows the correct angles for grinding twist drills. It is important that both angles be the same; otherwise, one side will cut more than the other.

Sharpening Other Tools

The Mower Knife: Remove the tool rest and hold the knife so as to maintain the original bevel as closely as possible. Specially shaped wheels that are high in the center are an advantage, but not necessary.

Butcher Knives: Butcher knives and cutlery can be ground rapidly on the fine stone. If they are held against the wheel very lightly and dipped in water frequently, they will not be burned.

Finishing the Edge

An oil stone should be used for finishing the edge of fine-edged tools such as wood-working tools and cutlery. The stone should be used with a good grade of light oil. Washing the stone occasionally with gasoline will clean out the pores and restore its original cutting action. Keep the bevel of the tool flat on the stone and move with a rotary motion. Use the entire surface of the stone as much as possible so as to avoid wearing it down in the center more than the ends.

IF an angle worm is cut in two, the head end will readily grow a new tail. The tail end may grow a new head if the cut is made near the head of the worm; if back of the center, the likelihood of growing a new head is remote. Such is the report of Dr. Libbie H. Hyman of the American Museum of Natural History.

A NEW YORK Extension Worker states that farmers who operated their own cold storages saved 16c per bushel of fruit over storage costs in central plants or with neighbors.

"The Chief says we're hopelessly old fashioned!"

Roland Burkhart, National Sheep Shearing Champion

Ohio clipped away with the championship in the second International Farm Flock Sheep Shearing Contest at the International Livestock Exposition when 27-year-old Roland Burkhart from Pandora, Ohio, won the "clip-off." The illustration shows him turning the trick. He says, "I'd sooner shear a sheep than eat," and the smile gives evidence that he means it. The prize money—$100 for first place, with $200 for eight additional prizes—was contributed by the Chicago Flexible Shaft Co., whose shearing equipment was used in the contest.

The following contestants represented fourteen states, winners in state contests: Herbert Peterson, New Windsor, Illinois; Carl Hakes, Hanover, Michigan; Roland Burkhart, Pandora, Ohio; H. L. Edwards, Hillsdale, Oklahoma; Charles Brinkerhoff, Interlaken, New York; Lee Hester, Arlington, Nebraska; John S. Espey, Valparaiso, Indiana; Upton Garrigas, Storrs, Connecticut; Joseph Speaker, Burlington, Wisconsin; Raymond Henderson, Hickory, Pennsylvania; Ralph Obenshain, Clifty, Arkansas; Joseph Rippenkroeger, Pilot Grove, Iowa; Anton Carlson, Marshall, Minnesota; and D. E. O'Neil, Custer, South Dakota.

The contest was judged on the quality of the job as well as the speed. The Australian shearing system was used in which the whole left side of the sheep is sheared lengthwise of the body instead of around. It is easier on the sheep, results in fewer second cuts and a better fleece.

National Sew and Save Week

February 24th to March 2nd is being sponsored as National Sew and Save Week. Some 25,000 retail stores throughout the country are cooperating in putting on special displays and providing helpful information and instructions on how to sew and how to save by sewing—how to achieve a professional appearance in clothes you yourself make. Watch for local announcements.

● Banish forever the drudgery of hand pumping! Do it the easier and better way by turning a faucet. Then you can enjoy the convenience of running water wherever it's useful.

● With an Aermotor Electric Water System you can have running water, under good pressure, everywhere at surprisingly low cost. Think of its helpfulness in the barn, kitchen, bathroom, and in improving the family health.

● You will find an Aermotor Water System full of new and exclusive features. It is thrifty in upkeep, and a permanent investment which will pay you big dividends in time, labor and money saved from the moment of installation.

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Electrical HOUSEKEEPING

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Aunt Hessie Shakes Her Head

AUNT HESSIE had come through my kitchen door just as Beth was taking a cheese fondue out of the oven for lunch.

"Now I was always taught," she said, adding just a sprinkle of salt to the quivering yellow spoonful on her plate, "that a good manager filled up her oven. We never used to heat up the whole stove and the oven and the kitchen for only one dish. Just because you don't have to chop and lug in wood to build a fire doesn't change it any. When you're burning electricity to heat up that oven, you should fill it up.

"That's just common sense. It saves current, and it saves your time in the kitchen; it saves time for preparation and time for watching if you can cook several things at once, or even several meals." Aunt Hessie waved her fork, "yes, even several meals—or parts of them."

This last was an afterthought wrung from Aunt Hessie by that Puritan ancestry that had bequeathed to her a rigid honesty along with good old Yankee thrift.

"I know, Aunt Hessie," I replied meekly, never betraying that I recognized the argument she was giving me as coming word for word from a folder on the use of the electric range I had given her the week before. Once Aunt Hessie learns a thing she thinks she has discovered it.

"I do usually make better use of a hot oven,—though I will say that if I have only one thing to cook, I'm not one to keep from cooking it because the oven isn't full, Aunt Hessie. But this morning I just didn't have time to plan ahead, even to stir up a pudding, or wash potatoes. I'm helping with the costumes for the children's Washington Birthday program."

Aunt Hessie shook her head mournfully and asked for a little more spinach. I always like a green vegetable with my fondue, don't you?

"I don't suppose it costs a bit more to cook an oven full at one time," she went on.

"Well, yes, it does take a little more current to cook a whole oven full of food than it does to cook one small dish like this, but not as much more as it would take to cook each dish separately," I put in hurriedly. Then I waited to see whether Aunt Hessie would remember the next step in using the oven wisely. She did.

"Do you know what you ought to have, Gail," she asked dreamily. "You ought to have dishes that will fit together on the rack of your oven, a roaster and smaller dishes to fit beside it. They should have tight covers, flat, so one dish can set on top of the other. And you ought to get them the same size as the surface burners of your stove so you could use them on top of the stove or in the oven."

"I have a set, Aunt Hessie. I really use it a lot. I often cook any vegetable that is in season by putting it in one of those covered pans with salt and pepper and butter and a half cup of water. When I'm cooking a whole meal in the oven,—"

"See," exclaimed Aunt Hessie triumphantly, "You have all those dishes right in your cupboards and yet you heat up the oven for just this little dish. I'll take a mit more, Gail. I don't suppose it'll be good left over. Now, about those oven meals."

"I am planning one for dinner tomorrow. You know I'm going to be down at school. I'll put into the oven a slice of ham, sprinkled with brown sugar and wet with half a cup of pineapple juice and a half cup of water. I cook it with milk and cream if I am going to be at home to put it in, but this meal is going into the oven by nine o'clock in the morning."

"What else are you having?" asked Aunt Hessie with interest.

"Carmelized sweet potatoes, green beans cooked with tomato sauce and onion, and

Beth had just taken a cheese fondue out of the oven for lunch

a little bacon, and an apple pie. "I'll set my oven control at 375 and turn on the switch before I leave. My clock will turn the current on at 4:30 and off at six. We'll be home by then, and dinner will be ready for the table.

"Hum," said Aunt Hessie thoughtfully. "I might come in around about five thirty and get it on the table for you. Carmelized sweet potatoes, you say."

• • •

a WARM breeze

WHEN Nancy was littler her hair curled all over her head in tight yellow ringlets. Now that she is way past six, the curls are waves except around her face where her mother curls the hair over her fingers.

Washing that curly head takes but a few minutes. A soapy scrub, then careful rinsing till the

Blowing it dry

water is clean, and a good brisk rub with a towel. But that doesn't dry it thoroughly and Nancy doesn't like to sit around and wait. She begins to coax to put on her snow suit and go out to play long before her mother thinks it is dry.

So shampooing was never very much fun for Nancy or her mother.

Aunt Linda Brings a Dryer

Then one day Aunt Linda came to visit. When she unpacked her suit case, there was a funny shaped package for Nancy.

"What can it be?" wondered Mother.

But Nancy just jumped up and down, tearing at the tissue paper stuck together with little red hearts for St. Valentine's Day. When she got the paper off, she looked with puzzled surprise at the bulky little barrel shaped contraption with a nozzle growing out of one side and a handle out

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GOULDS

189

WHY I WANT RUNNING WATER IN MY KITCHEN

(Winning Letter for November Contest,

When I read the November Contest title, "Why I Want Running Water in My Kitchen," I thought I would enter my reason. So when we were through shredding and I had more time I counted the pails of soft water I carried in just one week, and it was sixty-four. It takes thirty-five to forty strokes of the pump handle for one pail full. Our pump isn't like any other one I ever saw. It is a real old-timer. The whole pump, pipe in the cistern and everything, raises up and down with the pump handle.

We have to carry our well water, too. It isn't so very far, but it is up grade and up two steps to the porch. We use three to four pailfulls a day on common days, but with extra cooking it takes several more pailfulls. When canning, it means a good many more to scald fruit or vegetables, then the cold dip, and for filling the boiler for cold packing.

We have no drains, so it means that all the water carried in must be carried out, only that used in the bath tub. There is a pipe through the bedroom wall from the bath tub out of doors.

The amount of water in the fourteen quart pail I use will average twenty and one-half or twenty-one pounds. So last week I carried over thirteen hundred pounds. When I told my husband that at that rate I carried about thirty-five to forty tons a year in the house and most of it out again, he said it never rained that much last year. It does seem unbelieveable.

On wash days some of the water is carried three times. To the boiler, then the washing machine, and then out of the door yard and across the driveway, where it will be sure to drain away and won't stand where the little folks will play in it.

In the summertime it even takes more water. It means so many more baths for all of us. Carry the water in to heat, then carry it in to the bath tub, but what a blessing that pipe through the wall. We used to have to dip and dip and sop and sop to get it out of the tub and carry it out.

It would surely mean a lot easier work for me if I had "running water" "in and out" in my kitchen, and I could even be a little extravagant with it if I knew I didn't have to carry every drop of water in and every bit of water and garbage out.

Living on a farm means lots of hard work, but I think carrying water is one of the hardest jobs around the house.

MRS. RALPH STABENOW,
R. 2, Stephenson Co., Lena, Illinois.

of another. The handle had a cord on it so Nancy knew that whatever it was, this queer looking round box with a fine wire over its nozzle had to have electricity to make it work.

"Plug it in, dear," said Aunt Linda.

And Nancy carried it over to the wall and plugged the cord into a convenience outlet. When she lifted the ivory barrel again it was blowing a quick warm little breeze right in her face.

"To dry her hair!" exclaimed Nancy's mama.

"That's it," answered Aunt Linda. She took the dryer from Nancy and held it close to the back of her curly head. "See. The warm air blowing through these curls will dry them before she can spell cat. Or almost."

• • •

With a Cleaner on the Job

THERE is a strong feeling among good managers that they ought to get their money's worth out of every dollar they spend.

And a very good idea it is.

Had you thought of applying it to your vacuum cleaner? There it stands all shiny chomium and black, an efficient, indispensible tool, stored proudly in your cleaning closet or in the back hall, or

A quick pick-up

under the stairs. I don't know where you keep your vacuum cleaner, but my point is that maybe it stays there too much of the time.

Every few days you use it to clean rugs and carpets. That's what you got it for. A good

February Contest

It's all very well for stern housewives to go around insisting that we have a place for everything and everything in its place. Sometimes life sort of gets ahead of us; life, or Christmas presents, or our own enthusiasm. Anyway, we wake up some fine morning and discover that we have a lot of things that nobody planned a place for in our kitchens.

What do you do when this happens to you?

Our contest this month is really as easy as falling off a log. Just write a letter telling us where you keep the new electric equipment you have been getting these last few years. Yes, go back as far as the iron if you want to. Where do you keep your electric iron and its cord? Your mixer? Your toaster? Your coffee maker? Your waffle iron?

And then if you have been thinking about it, where *would* you keep it if you could make your kitchen over to suit your present needs.

Your letters should reach me, Gail Meredith, 700 S. Mills St., Madison, Wisconsin, by February 20.

We will pay five dollars for the winning letter, and a dollar for any we may use later.

cleaner takes off all the light surface dirt you can see with your eyes and it gets down and sucks up that heavy, gritty dirt that sinks down deep in the rug. It is the dirt you don't see that causes the most wear. But your cleaner gets it up. And it does it without stirring up clouds of dust to settle on walls and woodwork, on curtains and furniture.

It gets the rugs cleaner and makes colors brighter so the rugs wear longer and look better.

You know those things, of course. But do you know that it does a good job on bare floors, too? Do you know you can run it up against the baseboard and get out dust your mop can't reach? I hope you are using the cleaner to pick up the little piles of dust you push ahead of your dust mop. Running the cleaner over them and whisking them into the bag out of sight is much easier than stooping over to brush them into the dust pan. And it does a better job, too.

A vacuum cleaner is a good first aid to floors and tempers when you accidentally drop a drift of flour on the kitchen floor, or Junior and the dog turn over a little red wagon of sand in the hall. Cleaning the mop itself when the dusting is done is no inconsiderable part of your cleaner's job. You know how to do it, don't you? Just hold the mop in one hand and run the cleaner over it, first one side and then the other till you get out all the dust. To be sure you may take out a piece of yarn now and then. But what if you do? Your mop will be far cleaner than you can ever get it by shaking and you will be spared the job of hunting for a spot with an off shore wind to shake the mop.

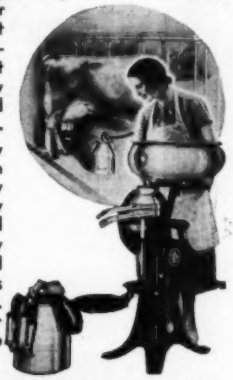
You have had the dust blow back in the kitchen, haven't you? I thought so. I have, too. That's why I like to let my cleaner clean the dust mop, too.

This is just a start. But if you get the habit of insisting that your vacuum cleaner do all the work it can, you'll be saving yourself while it is paying its way.

Increase *Your* Income The De Laval Way

The De Laval way is the sure way to increase your income. Your nearest De Laval Dealer will be glad to arrange for you to try a De Laval Separator or Milker, without obligating you in any way.

See for yourself why the great new De Laval Magnetic Speedway Milker is the world's best, fastest and cleanest milker. Discover how much better it will do your milking—how much valuable time and labor it will save for you.



See for yourself how much larger your cream checks will be with a new De Laval Separator—how quick and easy the De Laval Separator is to wash. New reduced prices on De Laval Separators. Sizes and styles for every need and purse.

If you do not know your De Laval Dealer, please write nearest office below.

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MILKING MACHINES

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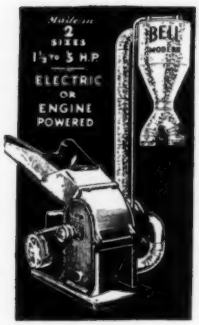
GIVES YOU ALL OF THESE

Expansion wings -- perfected heating bar -- draftless ventilation -- full edge heating -- Celotex insulated Armco Metal construction -- full automatic controls. Order Now While Prices Are Low.

The CYCLONE MFG. CO., URBANA, IND.



GRIND FEED ELECTRICALLY With a "BELL" MILL

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SEND FOR 24-PAGE ILLUSTRATED BOOK on "Stock Feed Grinding for Profit on the Farm." based on latest official tests. No cost or obligation, write today. DEALERS WANTED.

THE C. S. BELL CO.
Mfrs. Electric Hammer Mills, Corn Shellers & Feed Mixers.
Dept. 75, HILLSBORO, OHIO

ON THE AIR

Conducted by
JEROME J. HENRY

Sky Blazers on Air

"SKY BLAZERS," air show of the air, is a new half hour dramatization now being heard over CBS stations. The show portrays actual dramatic exploits from the lives of famous airplane pilots.

Each Saturday the broadcast is dedicated to the dramatization of the experiences of a noted aviator or aviatrix who is in the studio during the program. The program gives graphic pictures of aviation in its experimental, barnstorming days and its amazing growth. Geographically, the whole world is the setting for the series written by Phillips Lord.

Dorothy Lowell, who plays the title role in "Our Gal Sunday," poses pensively and looks questioningly at the camera.

• • •

Quest for Talent

JESSE L. LASKY has wound up his tour in search of talent for the new "Gateway to Hollywood" programs. He has returned to Hollywood to present the first finalists in his third talent quest series.

The vetran motion picture producer interviewed almost 4,500 eligible boys and girls. He selected 17 to appear in the "Gateway" dramatic sketches. After the 13 weeks of eliminations, a boy and a girl will be chosen for romantic leads in a feature motion picture.

• • •

Gag Writer Runs Into Trouble

"AFTER seven years of writing comedy for other people, I now find myself in the rather peculiar position as both writer and master of ceremonies of "If I Had a Chance," says Mort

MORE WOOL and MORE MONEY for you

STEWART SHEARMASTER

Get 10% more wool from same sheep or goats with the fast, easy-to-use Shearmaster. Has 78% more powerful ball-bearing, fan-cooled motor inside the special EASY-GRIP handle—diameter barely 2 inches. Extra powerful. New professional type Tension Control. Removes fleece from sheep in a few minutes. No second cuts. Longer fibre wool grades better—brings more money. Saves time—work. Shearmaster, complete with 2 combs and 4 cutters, only $22.95 at your dealer's or send us $2.00. Pay blaance on arrival. Slightly higher west of Denver. Write for new Stewart bulletin, "Harvesting the Farm Flock Wool Crop," and FREE catalog of Stewart electric and hand-power Clipping and Shearing machines. Made and guaranteed by Chicago Flexible Shaft Co., 5524 Roosevelt Road, Chicago, Illinois. 51 *years making Quality products.*

DOES A QUICK, SLICK JOB

Lewis, who is now heard in the NBC program.

As writer of the program Mort finds that he sometimes gives himself lines as master of ceremonies that he does not like. As a writer he thinks they are good. As a master of ceremonies he thinks sometimes that they are bad.

As a writer he claims that a master of ceremonies doesn't know good lines when he sees them. As master of ceremonies he thinks the writer is practically killing the show.

At times there is so much friction between himself as writer and master of ceremonies that he thinks he should get another writer for himself. But he does not want to do that unless he, as a writer, he can get another master of ceremonies to write for.

It all sounds very complicated. Nevertheless the experience is a good example of the trials and tribulations that a master of ceremonies has to go through when he writes his own scripts. He finds himself becoming much more finicky than he used to be as a writer alone. That's because if a joke or other lines fall flat, it is he, and he alone that has to take the rap. As master of ceremonies, if he blames the difficulty on the writer, the blame falls right on his own shoulders.

Lewis says, "I never knew how difficult a master of ceremonies job was until I got into it myself. Little things happen in broadcasts that the audiences are never aware of. Every once in a while a guest forgets a line or loses his place in the manuscript, and the master of ceremonies has to make up an appropriate remark quickly to cover up the mishap. The remark must be, if possible, amusing always in good taste, and it must be quick. It is much easier to sit down before a typewriter and type off a witty crack in 10 to 15 minutes than it is to get up before a microphone and think of one within practically a split second."

• • •

Tenth Radio Anniversary

"Yoo hoo, Mrs. Blo-o-m!"

A short time ago the tenth anniversary of that famous call by Molly Goldberg to her neighbor was observed over CBS stations. More than ten years ago now that call was first heard on the air in the program known as "The Goldbergs."

Molly and her family, Jake, Sammy and Rosey were just another radio experiment late in 1929. After months of hard work Mrs. Gertrude Berg, a young matron who had written trunkfuls of manuscript, but had never sold a line, finally succeeded in getting a radio station to put her serial on the air. But, would it click with listeners?

Today "The Goldbergs", heard daily, Mondays through Fridays, ranks as one of the most popular serials on the air. Mrs. Berg, author, director, and Molly of the show, is firmly established as a seasoned radio veteran.

Two brilliant young recruits from the stage have just been added to the cast. One is Jose Di Donato, who fills the role of "Teddy", a boy friend of "Rosey Goldberg." The other is pretty, red-headed Stella Reynolds, who plays the part of "Edith Elliott", a new friend of the Goldberg family.

YEAR 'ROUND RUNNING WATER OUTDOORS

with the VOGEL PATENTED FROST-PROOF HYDRANT

The Vogel Frost-Proof Hydrant guarantees a supply of running water outdoors that will never freeze no matter how cold the weather. Inexpensive, simple to install, cannot get out of order. Thousands have been in use for years on farms all over the country.

Your plumber handles Vogel Frost-Proof Hydrants. If he is not available write us for information.

JOSEPH A. VOGEL COMPANY, Wilmington, Delaware

QUESTIONS and ANSWERS

What Size Pulleys for Grindstone?

Question: *On page 20 there is a picture of a grindstone outfit by Walt Messenger. I have a ¼ horsepower motor and would appreciate having the sizes of the two large pulleys.* A. B. R., Me.

Answer: In order to slow down the speed of a 1750 rpm. motor to a 58 rpm. grindstone as shown on page 20 of our November 1939 issue, you can use any of the following pulley combinations: 3 in. on motor to 15 in. on jack shaft; and 3 in. drive on jack shaft to 18 in. on grindstone to give 58 rpm.; or 2½ in. to 12 in. and 2½ to 15 in. giving 59 rpm.; or 1¾ in. to 10 in. and 2½ to 12 in., giving 65 rpm.

Warm Water for Men's Wash Room

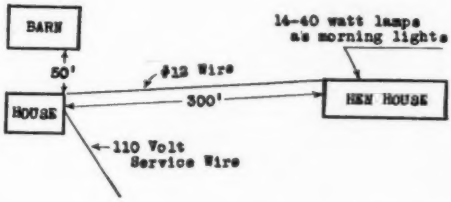
Question: *Our men's wash room is in the cellar; range boiler some distance away in kitchen above. Hot water is not always available. Is there any way to attach an electric heater in the cellar to provide instant hot water at all times? What would be first cost and operating cost?* A. R., Ill.

Answer: If two gallons of hot water at a time would be sufficient and you do not care to have it run too fast, I would recommend one of the new two-gallon electric water heaters made by the General Electric Company, Schenectady, N. Y., or Hynes & Cox Electric Corp., Albany, N. Y. These cost something less than $25, and there would be no installation expense as they are made so that you could install them yourself, providing you have an electric circuit running to the point of use.

These heaters have elements of about 1000 watts and are equipped with thermostats so the electricity is cut off as soon as the water is hot. Cost of operation would depend upon the amount of water used.

What Size Wires

Question: *I am thinking of putting lights in the barn. I want to wire so I can use a 1 h. p. motor for cutting fodder and shelling corn. Barn is 50 ft. from the house. What size should I use? We have 300 ft. of No. 12 wire to the chicken house. Is this large enough for 14-40 watt lamps?*
G. B. J., New Jersey.



Answer: Your No. 12 wire from the house to the poultry house will give you a drop of 5 volts with all the lights burning. This means you will be getting only about 87% of the light you should get from your lamps, and you will be using about 93½% as much electricity as you would at full voltage. The difference, or about 6½%, is lost in heating the wire between the house and hen-house. It would have been better had you installed No. 10 wire or No. 8. The No. 10 wire would give you a drop of about 3 volts, and the No. 8, less than 2 volts. If you use 110 v. lamps in place of 115 or 120 v, you will get the full amount of light. The heat loss in the line would hardly warrant replacement unless you add more lights or water warmers.

Now you can have a COMPLETE automatic WATER SYSTEM

FOR AS LOW AS $46.75

OPERATING COST LESS THAN 1¢ A DAY

With original and operating cost so low, every farm home can now easily have the happiness, health, protection, and convenience of automatic running water. You will be delighted in the quietness and trouble-free operation of Red Jacket Water Systems.

THE WATER SYSTEM VALUE OF THE YEAR

WORLD'S MOST COMPLETE LINE OF HAND, WINDMILL AND AUTOMATIC PUMPING EQUIPMENT

In the Red Jacket Line you will find the most efficient pumping unit for your particular need — over 300 water system combinations and 160 hand and windmill pumps. Also complete line of Portable and Permanent Water Softeners and Conditioners.

Send today for complete Line Manual that tells you how to select the right pumping unit.

RED JACKET MANUFACTURING CO., Dept. E-1, Davenport, Ia.
Please send me new Complete Line Manual of Pumping Units.
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RED JACKET

Presenting the NEW SIMPLEX SERKUL-HEAT ELECTRIC BROODER

Combines correct heat distribution, proper ventilation, and safety. A new high in electric brooder efficiency and quality.

SIMPLEX BROODER STOVE CO.
701 Grandville Ave.
GRAND RAPIDS, MICH.

Send for FREE

I would recommend No. 8 wire to the barn. The additional cost over No. 12 would be very little for that short distance, and it will give you ample capacity should you ever wish to add more load.

Electric Room Heating

Question: *Is there any good way, at reasonable cost, of heating by electricity a bedroom* 12x15x9 *ft.? At what cost?* Mrs. A. J. M., Ind.

Answer: Such a room, assuming frame construction and average exposure, would require a 4 kilowatt heater to raise the temperature and hold it 50 degrees above the outside air temperature. If the room was to be heated only occasionally this might be economical. Convection type heaters, electric-steam radiators or heaters having fans in combination for distributing the air should be used for heating the whole room. For spot warming, as with a fireplace, use a radiant type heater. In northern climates electricity can hardly compete with coal, oil or wood for general house heating on a cost basis. From the standpoint of convenience and for occasional heating it has possibilities.

Sparrows in the Barn

Question: *We are bothered with sparrows in our barn and would like some sort of electrical device to electrocute them.* G. A. K., New Jersey.

Answer: There is no device for electrocuting sparrows that we know of. An electrocutor might be built, but it would be inhumane and would be dangerous to use because of the fire hazard.

Soil Cable for Preventing Pipe Freezing

Question: *Can I use soil heating cable around pipe from wind mill pump to overhead tank to keep pipe from freezing? The pipe would be boxed in. How much cable? How much electricity will it use? How can it be turned on and off?* E. A. I., Conn.

Answer: I would recommend using about 80 ft. of soil heating cable. Wrap the cable from the bottom to the top and back down again, connecting the ends to the opposite sides of your 110 volt circuit. You can attach the ends to a heavy duty plug, and plug it into a cord connector so it will

STERILIZE DAIRY UTENSILS

with the new Improved **ESCO** Electric steam sterilizers

Model S-24 cut-away to show how steam penetrates to every part of Esco sterilizer

Produce the same sure results—automatically—day in and day out.

Eliminate fire hazard—dust, dirt and smoke. Do a *better job at lower cost* with less work.

Eleven standard models—a size for every dairy.

New descriptive literature will be sent gladly. Send postal or write today.

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COOK ELECTRICALLY WITH A Monarch COMBINATION RANGE

A size and model for every home. See your Monarch retail outlet or write for particulars.
MALLEABLE IRON RANGE CO.
1239 LAKE STREET BEAVER DAM, WIS.

NEW KIND OF PORTABLE MILKER

MEETS ALL INSPECTION REQUIREMENTS . . . . . PLUS!

FREE! Rush name for sensational facts and amazing low price on the Portable Milker that took 35 years to perfect. Information Free

Amazing 2-piece milk head cleaned CLEAN in a few seconds. Vacuum adjustable to each cow. No pulsator, no pipelines. NEW Lip Action Valve that can't stick or foul. Result of 35 years' experience. Nothing like old portables. Don't buy any milker until you get facts about the new

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Anker-Holth Mfg. Co., Room M 12 Port Huron, Mich.

Brood ELECTRICALLY with a TRUMBULL

TRUMBULLS—ALL-WEATHER BROODER and BROODERATOR UNIT for Home-Made Hover—will raise more and better Chicks. No supplementary heat required, even in winter. Get all the facts NOW. Ask for Bulletin 10000, "Electric Brooding."
THE TRUMBULL ELECTRIC MFG. CO.
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BROOD CHICKS SAFELY
and for LESS COST!!
Use an ANDERSON
ELECTRIC BROODER
Brood chicks the safe, low-cost, modern way—with electricity. Insist on a genuine Anderson Electric Brooder and profit by new, sound and up-to-date improvements. Models . . $1.75 to $39.50
Retail from $1.75 up
See your Dealer or Write today for low prices.
ANDERSON (Fan Type) Nu-Air
For those who want the best. Has cut operating costs 25 per cent under test.
Dealers . . Write for new set-up.
Everything in Poultry Supplies
ANDERSON BOX COMPANY
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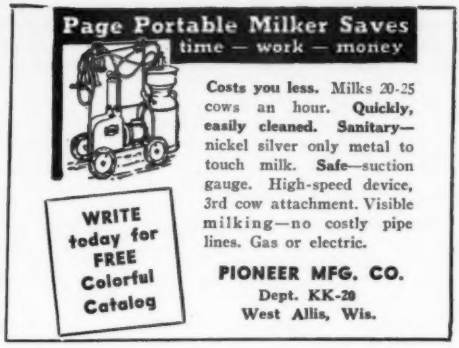
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time — work — money
Costs you less. Milks 20-25 cows an hour. Quickly, easily cleaned. Sanitary—nickel silver only metal to touch milk. Safe—suction gauge. High-speed device, 3rd cow attachment. Visible milking—no costly pipe lines. Gas or electric.
WRITE today for FREE Colorful Catalog
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West Allis, Wis.

be easy to attach. 80 ft. of soil heating cable will use 300 watts. The shorter the cable, the more electricity it will use.

Wire Sizes for Motor and S-4 Lamps

Question: *My barn and chicken houses are some 1,000 feet from the house, and also have a small work shop; I would like to know what size wire to use to supply the above buildings.*

I may install a small feed grinder with a 1 hp. motor. What size wire will be necessary to supply the motor?

Will using lamps such as the S-4 in the chicken houses require a larger wire?

How far apart should the supports for the wires be?

Answer: Assuming you are going to use 1400 watts in lamps and appliances in addition to the 1 hp. motor, you should use two No. 0 wires from your house to your barn in order not to have more than 5 volts drop in that distance. If you use 220 volt connection using three wires in place of two so you would have both 110 and 220 volts at the barn, you would need three No. 6 wires to give you the same service. The wire sizes are large because of the distance between house and barn.

For the motor only you should use two No. 3 wires on 110 volts or 2 No. 8 wires on 220 volts.

The S-4 lamp uses only about 125 watts, so it would not contribute much to your voltage drop. However, this lamp is somewhat sensitive to low voltage so the wire should be large enough to prevent other appliances from causing the voltage to be low.

Your supports should be placed probably about 140 ft. apart. The higher the pole, the further apart they may be placed. You should keep about 18 ft. clearance between the low point of the wires and the ground.

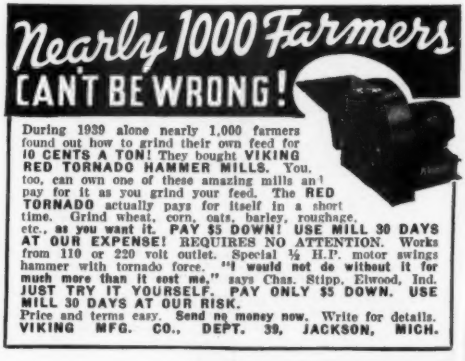
Coal vs. Electricity for Cooking

The Problem: *In October, at the suggestion of F. M. R., Ohio, we invited comments—favorable or unfavorable—from readers who had had experience with cost of cooking with electricity and other fuels.*—EDITOR.

An Answer: Let me suggest to Mr. F. M. R., Ohio, that he try my method with his electric range. I have both coal and electric range in my kitchen and in winter when my line is heavily loaded, lighting poultry house, residence and eight electric brooders, I use the coal range and welcome its cheery warmth—but in summer I use my electric range; and what a blessing it is, no heat in the kitchen, automatic control so that I can prepare my dinner, put it into the oven, set the control and go out for my many duties on the farm and know that all will be well at supper time. I find that my time is far more valuable to me than the little expense there is to electric cooking.

Mrs. F. K. M., Virginia.

LOW COST BROODING
Boyd Warner, Vice - President and Manager, wants you to have a copy of the free booklet, "How to Brood Chicks Electrically." This tells how to raise more and bigger chicks at low cost with genuine Warner Electric Brooders. Warner's produce a flood of heat and healthful infra-red rays. Approved by Underwriters. Start chicks and turkey poults this new, better, economical way! Your dealer will demonstrate. Ask him now.
WARNER Electric BROODERS
Write for free booklet.
THE NATIONAL IDEAL COMPANY, TOLEDO, OHIO


Nearly 1000 Farmers
CAN'T BE WRONG!
During 1939 alone nearly 1,000 farmers found out how to grind their own feed for 10 CENTS A TON! They bought VIKING RED TORNADO HAMMER MILLS. You, too, can own one of these amazing mills and pay for it as you grind your feed. The RED TORNADO actually pays for itself in a short time. Grind wheat, corn, oats, barley, roughage, etc., as you want it. PAY $5 DOWN! USE MILL 30 DAYS AT OUR EXPENSE! REQUIRES NO ATTENTION. Works from 110 or 220 volt outlet. Special ½ H.P. motor swings hammer with tornado force. "I would not do without it for much more than it cost me," says Chas. Stipp, Elwood, Ind. JUST TRY IT YOURSELF. PAY ONLY $5 DOWN. USE MILL 30 DAYS AT OUR RISK.
Price and terms easy. Send no money now. Write for details.
VIKING MFG. CO., DEPT. 39, JACKSON, MICH.

ELECTRICITY HELPED ME
EARN THIS MONEY

$33 from Sheep Shearing

Here is the way electricity helped me earn a little extra money: Four years ago I bought an electric sheep shearer, and in the four years' use I paid for the shearer and have $12.00 to the good. And it also gave the boys a chance to learn to shear sheep. Were it not for electricity I would be out $33.00 paid to sheep shearers.

Yours very truly,
ANTON J. MACK,
Ogilvie, Minn.

Contest Letter

Electric Motors

(*Here from page* 11)

just like using a 10-ton truck all year round just because 10 tons had to be hauled occasionally, but the usual load only a ton or a ton and a half.

In turning to 3-phase motors, he learns that they are available in any size, cost less per horsepower than single-phase motors, but discovers that the nearest 3-phase line is many miles away.

What then is he to do? The answer is to use smaller machines. For example, instead of a large hammer-mill which requires 10 or 15 hp to operate, use a smaller mill which requires only 3 or 5 hp. Small hammer-mills are now available which are very efficient, having more capacity *per horsepower* than the larger mills. It has been amply demonstrated that even ear corn can be ground with as little as 2 hp. The smaller machine may have to be operated more hours altogether, but may require fewer men to operate, costs less to begin with, and costs less to operate because the smaller machine has more capacity per horsepower.

Ultra-Violet Lamps

(*Here from page* 12)

will accept nothing else. One husband who got lax about coming for eggs put store eggs in the Castler cartons; but he did not fool the Mrs. She came to the farm herself and raised a rumpus about the poor eggs.

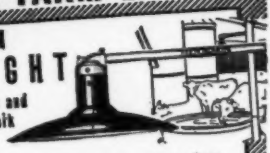
Mr. Casler has his S-4 lamp hung 5 ft. above the floor over each feed hopper, one lamp to each 10 ft. hopper. The aluminum reflectors installed two years ago are still in fine condition and some of the original lamps are still in use. His method for telling whether any lamp is producing an effective amount of ultra violet is to try it on his own skin. One should be careful in doing this with S-1 and S-4 lamps limiting the applications to 5 to 10 minutes at 2 or 2½ feet the first time and remembering that sunburn does not burn until several hours after you get it. If you do not get any from a lamp, then the hens don't either.

S-4 lamps produce therapeutic ultra-violet of a wave length between 2800 and 3200 Angstrom units, and are different and used for a different purpose than the new Sterilamps or germicidal lamps which produce radiations of around 2537 Angstrom units.

MODERN FARM LIGHTING

BENJAMIN
YARD LIGHT

Light your farm yards and you'll get the rush work done on time!



Here's an inexpensive Yard light for your farm that will make you wonder how you ever got along without it! Manufactured by Benjamin, world leader in lighting equipment, this reflector is made of lifetime porcelain enameled steel. Easy to keep clean. Comes packaged ready for installation. Nothing else to buy. Package contains reflector, socket, conduit arm, wall fitting, bolts and 2 ft. wire leads.

SEE YOUR ELECTRICAL STORE OR WRITE THE BENJAMIN ELECTRIC MFG. CO. DES PLAINES, ILL.

BENJAMIN
VARIETY-LITE

NEW LOW COST PORTABLE FLOODLIGHT FOR FARM FUN on the farm! Think of how your family and friends will enjoy a yard floodlighted for night sports, night parties, etc. Provides protection against prowlers, too! Use it for night work. Take it from one location to another. A quality product made of lifetime porcelain enameled steel. Complete with unbreakable plug and extension cord . . . efficient—low priced.

BENJAMIN LIGHTING EQUIPMENT

Distributed Exclusively Through Electrical Wholesalers

SAVE ½ the COST of Separating Milk

Startling new cream separator developments cut cost of separating milk over 50%! It's the sensation of 1939! Don't buy a cream separator until you get the facts about Anker-Holth's latest achievement. Big value in first cost! Big saving every day you use it!

Write Immediately For Full Particulars

Whether you milk 5 cows or 50, write and learn how you can make more profit from your milk than you have ever made before. Write at once to

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A GREAT ELECTRIC SINCE 1929

Approved by the Underwriters

Scientifically correct, with electric fan three-way air diffusion that cuts current cost 30 to 40%. Edge to edge silvered insulation. Head room for big founts. Bright gleaming 36-inch concave reflectors. Dual elements for safety. Steep, rigid canopy stays clean. 19-inch vent tube cuts heat loss. No room too cold. Write for folder on these sensational brooders.

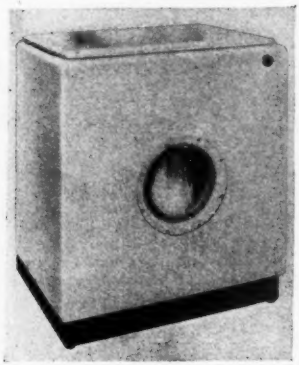
THE MAKOMB LINE 103 MADISON AVENUE MACOMB, ILLINOIS

World's Largest Manufacturer of Brooders

Names and addresses of manufacturers of the articles described in this column will gladly be furnished upon request to What's New Department, ELECTRICITY ON THE FARM, *24 West 40th Street, New York, N. Y.*

Tumbler Clothes Drier

This new electric drier 38¾ in. high, 33½ in. wide, and 27 in. deep will handle a tubful of clothes from the washer and dry them completely in from 30 to 45 minutes, or to ironing condition in 15 minutes. The cabinet contains a perforated cylinder for the clothes which revolves 44 turns per minute under thermostatically controlled electric heating elements. Clothes are dried soft and fluffy. Washing and drying may be completed quickly without carrying clothes to and from the line and regardless of weather conditions. Power consumption 4600 watts. 220 volts, 21 amperes. Requires special wiring similar to a range.



New Book

PRACTICAL ELECTRICAL WIRING — Residential, Farm and Industrial. By H. P. Richter. McGraw-Hill Book Co., 6 x 8¼ in., 503 pp., 457 illus. "Simple enough for the beginner, yet complete enough to be of value to those engaged in electrical work. In three parts: (1) fundamentals of electrical work; (2) wiring residences and farms; and (3) wiring stores, factories, schools, etc. Here is one book which is understandable, interestingly written, with many illustrations showing how to do wiring and which do not leave details to the imagination. Price $3. McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York.

New Publications

MOTION PICTURE CATALOG. New catalog of pictures offered by General Electric Co., Schenectady, N. Y. These films which are loaned free, except for shipping cost, are listed in the catalog under science, generation and distribution of electricity, transportation, electric equipment, industry, light and lighting, welding and household appliances. Ask for GES-402F.

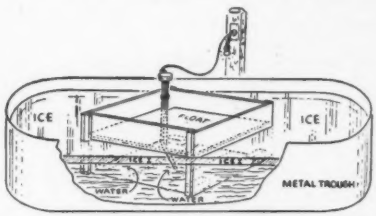
MODERN HOG FARM IMPROVEMENTS. 12 pp. 8½ x 11. Planning, plans and construction of concrete hog houses and equipment. Portland Cement Assoc., 33 W. Grand Ave., Chicago, Ill.

HANDY GUIDE FOR SELECTING FARM MOTORS AND CONTROLS. 4 pp. General Electric Co., Schenectady, N. Y. Ask for GES-2328.

DRYING HAY IN THE BARN AND TESTING ITS FEEDING VALUE. Experiment Sta. Bul. 170. Electric blower and duct method. 24 pages, 12 illus. University of Tennessee, Knoxville, Tenn.

Stock Water Heater

Another new and patented stock water warmer known as the Henderson Waterer is being placed on the market. It has a 400 watt, thermostatically controlled heater, designed for use in uninsulated, outside, wood, metal or concrete tanks, and sells at $22.50 f.o.b. factory. The principle of the heater is that it warms a small quantity of water contained in a box about 22 x 30 inches which the user builds and places inside the water tank. The heating element is placed inside the box which is supplied from beneath with water from the larger tank. Ice on the remainder of the tank acts as an



insulator. An insulating float on the water surface inside the box further conserves electricity. The water inside the box is held at 40°, or the thermostat may be adjusted to some other temperature. When the water reaches that temperature, the power cuts off. The heater may be plugged into an ordinary convenience outlet. It is claimed to be economical in power consumption.

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